



**California Energy Commission**

**California's Preferred Loading Order  
2005 Energy Report  
July 25, 2005**

**Distributed Generation**

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## **Two key Distributed Generation (DG) issues addressed in 2005 Loading Order Report**

- More Transparent Distribution Planning
- Combined Heat and Power (CHP)
- Today's Presentation Topics
  - DG and CHP Goals and Deployment
  - Planning and Integration
  - Capacity and Energy Production Tracking



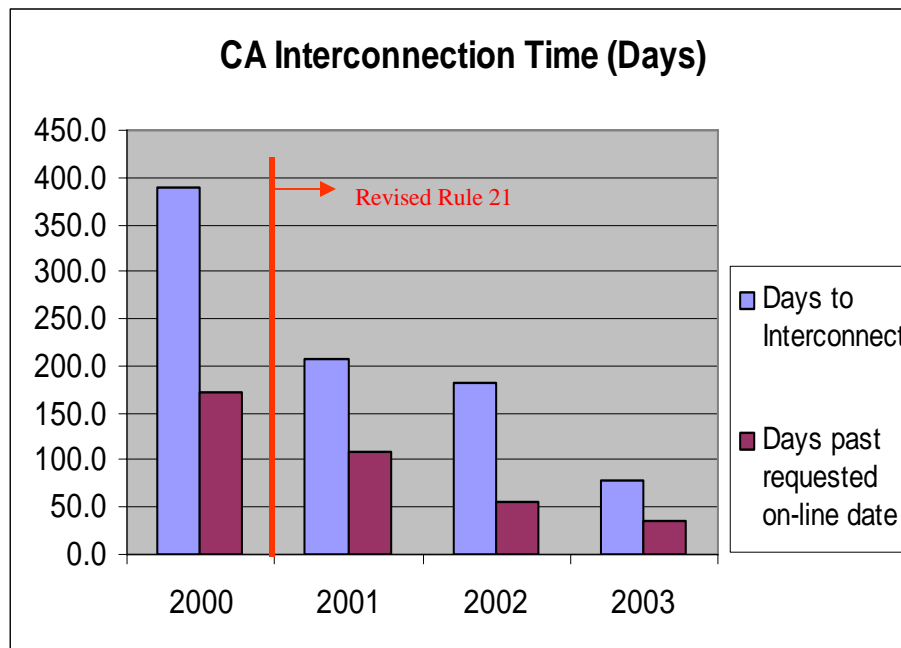
## DG Goals and Deployment

- California has no mandate for DG resources
- No explicit capacity or energy goal for DG
- IEPR, EAP, various legislation specify preference for DG over traditional central power plants, transmission and distribution
- ~ 2,500 MW of installed DG capacity presently (< 20MW capacity)



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# Streamlined interconnection rules have dramatically reduced time to interconnect and interconnection costs



### Savings Through New Rule 2001 – 2003

< 1MW	> 1MW
\$ 8 Million	\$ 26 Million



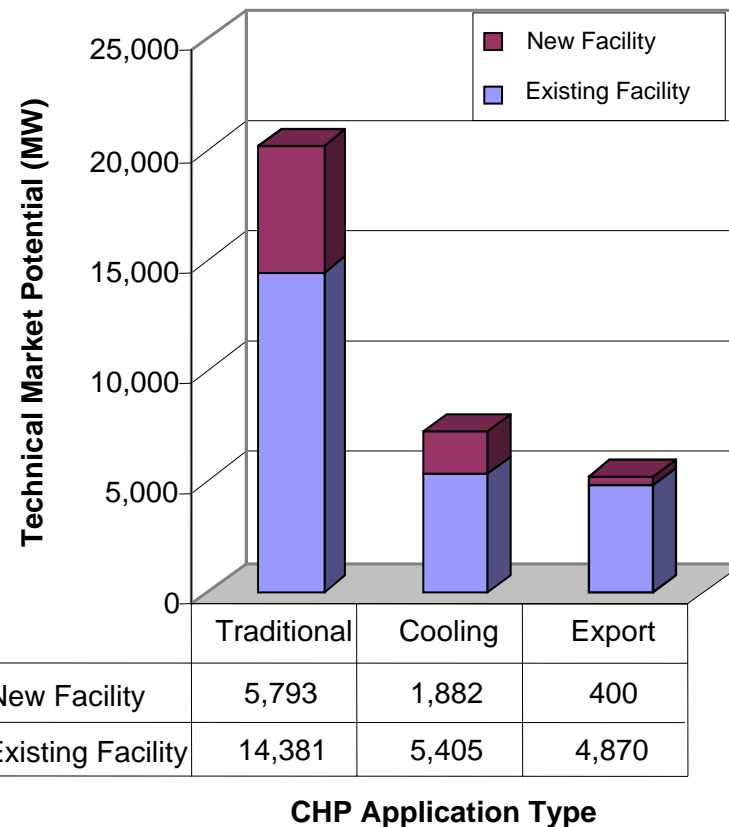
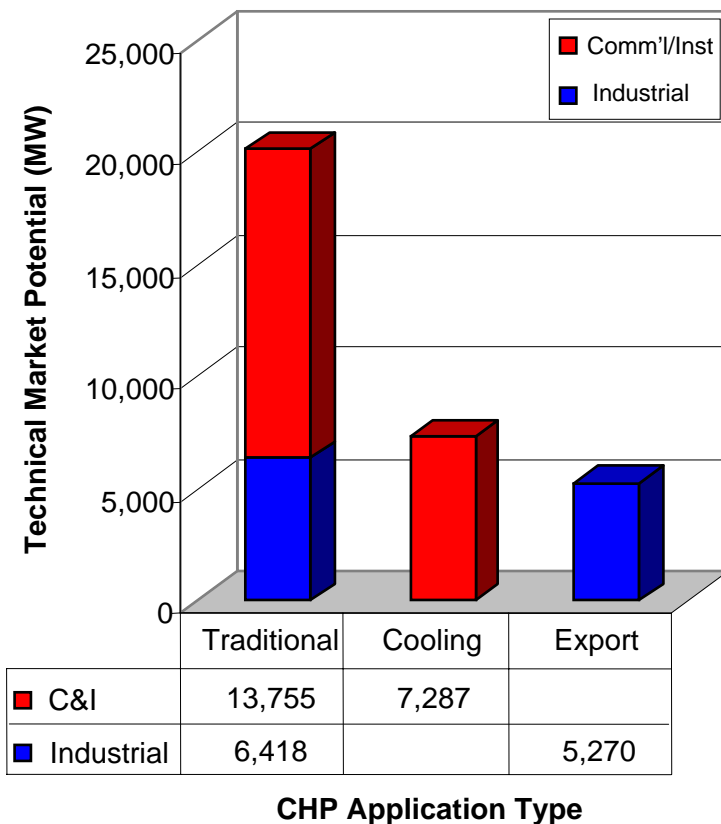
## CHP Goals and Deployment

- California has no mandate for CHP resources
- No explicit capacity or energy goal for CHP
- ~ 9,100 MW of installed CHP capacity presently (mostly in industrial sector)
- ~ 30,000 MW of technical potential remains
  - Analysis indicates over 5,000 MW of untapped CHP potential at existing large end users
- Policy scenario analysis for 2020 indicates as much as 7,300 MW additional market potential



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### Two thirds of remaining technical potential for traditional CHP is in commercial/institutional sector

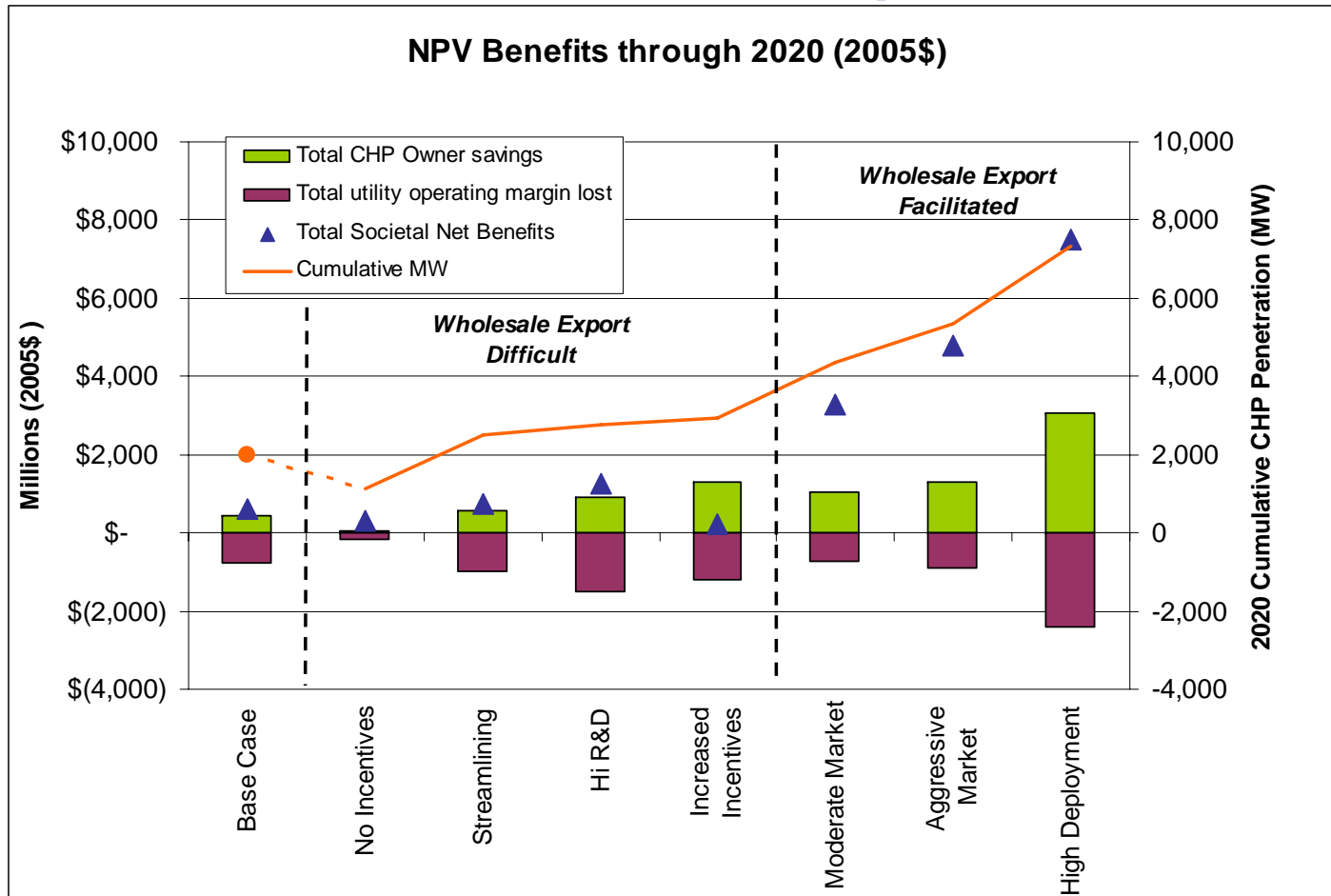


Source: *Assessment of California CHP Market and Policy Options For Increased Penetration*, California Energy Commission, Publication #CEC-2005-060-D, April 2005.



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# Market potential analysis for CHP identifies cost/benefits, MW additions and policies necessary



Source: *Assessment of California CHP Market and Policy Options For Increased Penetration*, California Energy Commission, Publication #CEC-2005-060-D, April 2005.



# Payment Of Service Vs. Incentives

- Hypothesis is this approach should over time:
  - Increase penetration of CHP which typically have higher efficiency than central station generation
  - Decrease losses to utility and non-participating customers relative to the SGIP incentive approach
  - Provide clearer exit strategy that ultimately eliminates all incentive 'subsidies' and has only payments based on services that DG / CHP provides
  - Achieve higher societal benefits because both customer and utility benefits are provided
  - Have less resistance from stakeholders than increasing subsidies because payments are matched with benefits, and rate impacts are therefore lower
- Should California move toward payment of service rather than incentives? Are these presumptions true?



## Policy Options Affecting Deployment

- Apparent policy options with greatest affect on DG and CHP penetration:
  - Electricity export, particularly for large CHP installations, through approach similar to 'net metering' for renewables but at wholesale electricity price
  - Transmission and distribution (T&D) payment through operating agreement for DG or CHP with physical assurance in capacity constrained areas
  - Payment for availability during system peak times based on generation capacity value to improve resource adequacy
  - Payment based on CO<sub>2</sub> mitigation for CHP through production tax credit in \$/kwh
- Are these options feasible? How should they be implemented? What issues are being overlooked?



# Planning Tools

- New planning tools and methods, and progressive utility approaches show cost effective DG, DR, CHP, and EE can compete with wires and poles
  - How can Detroit Edison's corporate commitment and business model be replicated in California?
  - Research (e.g., New Power Technologies) has shown that DG and DR capacity at most customers sites provides some level of utility benefit. What are the implementation hurdles to using this approach and how can they be resolved?
  - Given results from U.S. DOE's Future Grid research, how can utility distribution planning integrate DG, DR, CHP and EE into the process?
  - Given the impending billions to be invested in utility distribution systems, should California strive for evolutionary versus incremental improvements?
  - Should utilities be given regulatory incentives (e.g., ERAM) to plan for and promote cost effective DG and CHP?



## Monitoring and Evaluation

- California needs to improve capacity and energy tracking from DG and CHP
- Various reporting mechanisms exist but most focus on capacity
  - How can reporting be accomplished so that progress of DG deployment can be measured?
  - How can this be done cost effectively?
  - How do we respect customer confidentiality issues?